

Flexible Phenolic Impregnated Felt, Phase I

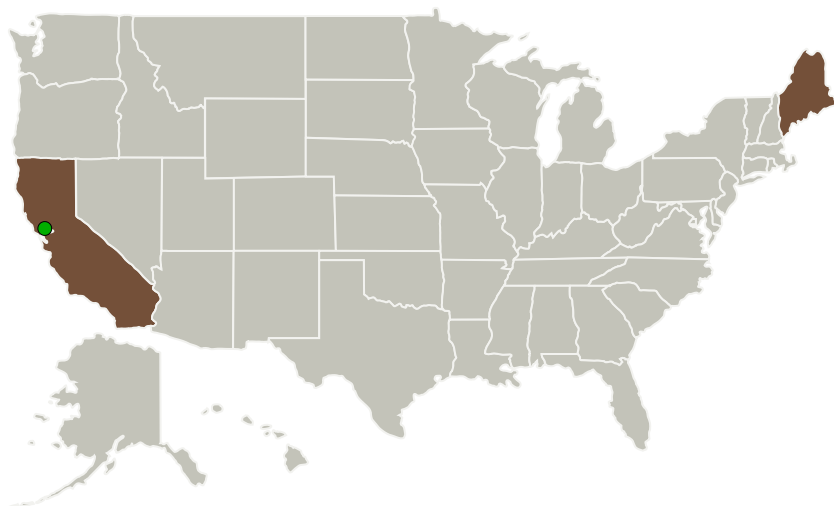
Completed Technology Project (2011 - 2011)



Project Introduction

During this program Fiber Materials, Inc. (FMI) will develop innovative yet practical methods for preparing Phenolic Impregnated Felt (PIF) materials for thermal protection system (TPS) segments and heat shield assemblies. Future mission flight environments and designs, such as those anticipated for Mars EDL missions, will require a variety TPS options to accommodate entry system designs. The capability of the developed PIF solutions will address various vehicle shapes, integration methods and the ability to deploy a flexible TPS. Testing of mechanical and thermal robustness, heat exposure and surface recession under representative mission conditions will be conducted in a two phase program approach. The Phase I program will assess materials, designs and processing options that can be cost effectively manufactured and assembled. The material approaches, design options, fabrication/assembly methods, Phase II work plan, Phase II proposal and final report are delivered at the conclusion of the Phase I program. During the Phase II program, a mission-applicable PIF TPS utilizing the developed material system will be demonstrated and tested under representative flight conditions. The proposed materials, designs and methods are currently TRL iÜ 3. It is anticipated that TRL iÝ 5 will be achieved at the conclusion of a successful Phase I and Phase II program.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Fiber Materials, Inc.	Lead Organization	Industry	Biddeford, Maine
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Maine

Project Transitions

▶ **February 2011:** Project Start

✓ **September 2011:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138168>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Fiber Materials, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

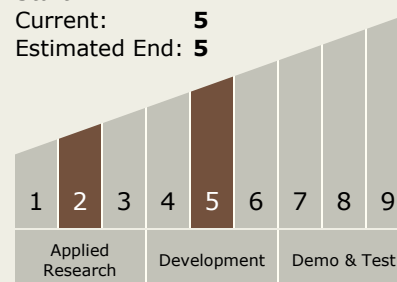
Carlos Torrez

Principal Investigator:

Keith Meiler

Technology Maturity (TRL)

Start: 2
Current: 5
Estimated End: 5



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Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
 - └ TX09.1 Aeroassist and Atmospheric Entry
 - └ TX09.1.1 Thermal Protection Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System